PERMUTIT

Household

WATER CONDITIONING

Complete specifications and details

A·I·A FILE No. 29-D-3

NO HOME IS MODERN WITHOUT WATER CONDITIONING

330 WEST 42ND STREET • NEW YORK

TODAY'S homes are much different from those of a generation ago. Living is simplified and made more pleasant through the installation of many useful items of household equipment. People have automatic heat—they have conditioned air—but the problem of water and its quality is the most important of all.

Obviously water must be potable—but that doesn't end the story. Many water supplies, suitable for drinking, are not fit for other household use. They probably contain hardness, which is an ever present menace to proper service of plumbing and to efficient operation of the heating system and water heater. Other water supplies may contain dirt—or may have iron in solution which causes stains on porcelain. Some water supplies even have an unpleasant taste or odor strongly reminiscent of fish, or of marsh lands, or are redolent of evil-smelling chlorine compounds. Still others may be corrosive.

All these conditions can be remedied by means of proper water conditioning, and The Permutit* Company, out of its more than 25 years of broad experience, offers for your selection the following line of household water conditioning equipment, of simple, sturdy design, built to give years of satisfactory service.

Sound advice to any builder of a new home is this: Analyze the water supply. Too often a home owner invests in plumbing unsuited to the water. Other types of plumbing or protective water conditioning may save money and give greater satisfaction. For free water analysis, write Permutit to send a water sample shipping carton.

Do not think that water conditioning is a rich man's luxury. There is a size to fit any purse. And a Permutit water softener, for instance, because of the economies it effects, pays for itself, on the average, in a little over a year. Carefully compiled figures show that an average American family of four persons will save $117.20 each year by installing a Permutit water softener.

The United States Department of Commerce, Bureau of Mines, in its bulletin No. 328, says, "In the near future the residents of those sections of the United States where hard waters prevail will no longer be willing to endure the discomfort and expense of hard water, but will require the installation of..... softeners. Indeed the day is fast approaching when soft water will be as necessary for the comfort of the household as ice, gas and electricity are now."

*Pronounced "per-*mute*-it"

WATER SOFTENING

WHERE TO USE SOFT WATER

ADVANTAGES

HOW TO SELECT

SOFT WATER should be used throughout the home, and for this purpose, a water softener is piped on to the main water inlet pipe so that all water flows through it, and is softened. The softening action is instantaneous, and the only care the softener requires is periodic flushing with a solution of common salt. In some models this is done automatically; in others, by hand. This process is called regeneration, and a size of water softener is so selected that regenerations need be carried out only once each week.

The active softening material, called zeolite, is a tasteless, odorless, insoluble substance of granular appearance that has the unique property of abstracting all calcium and magnesium (the hardness-forming elements) from water. The zeolite lasts many years, and is periodically brought back to full water softening power by the regeneration process.

In selecting a type and size of water softener, the choice will usually fall upon an ES or MS model. The ES series is regenerated automatically and therefore needs only the addition of salt to the brine tank a few times a year.

Anyone who has ever used a completely softened water (of zero hardness) will never again be satisfied with hard water. Soft water destroys no soap, never forms sticky, unpleasant soap curds, never leaves a ring around the bathtub. It is used in leading beauty parlors because hair shampooed in it is silken and glossy. Soft water makes any razor seem twice as sharp as before.

Elimination of soap curds means the removal of one of the most frequent causes of skin irritation — the after effects of hard water bathing. In dishwashing, there is no unsightly film, and even glasses and silverware drain dry to a high polish. Household laundering in soft water preserves the life of fabrics, usually extending their period of usefulness one-third.

Soft water, too, does away with the deposition of hard, rock-like scale in pipes, water heaters and boilers. Whenever hard water is heated, this scale is deposited, choking off the flow of water, wasting fuel, and eventually causing the expensive replacement of plumbing. Soft water absolutely prevents such deposits.

In brief, a water softener brings to a modern home the lightening of household tasks, the personal pleasure of luxurious bathing, the protection of plumbing from scale — all at such a decided decrease in household expenses that the softener saves money for its fortunate owner every year during its long and useful life.

To select the proper size softener for your home is a simple matter if you happen to know the hardness of the water; or if any analysis is available through your city chemist. Allow 50 gallons of water daily per person. When you arrive at the weekly total consumed in your home, read across from the hardness in the capacity table of the model you have selected and choose the next larger capacity on your water supply than the total you have calculated.

For example, if you have four in your family, you probably use 4 (people) x 50 (gallons) x 7 days = 1400 gallons of water per week. Assuming your water supply is 12 grains hard, you will find type ES 12 or MS 12 will give you 1750 gallons between regenerations, which is ample for your needs.

The Permutit Company warrants that when the softener is properly installed and operated, it will furnish completely softened water between regenerations, and that the water delivered will be

clear and suitable for household use. The quantity of water softened between regenerations is given in the tables on following pages.

Selection of models of Permutit water conditioning equipment other than water softeners is usually based upon the flow of water which is required.

WATER SOFTENER SPECIFICATIONS

Water Service. The service line from the street main shall be of a size large enough to deliver.....gallons of water per minute, and shall not be less than.....inches in diameter. The minimum water pressure shall be 25 pounds per square inch. (If pressure is between 15 and 25 pounds, low pressure equipment should be specified.) The maximum pressure allowable at any time is 100 pounds per square inch. (If at any time it is likely to exceed that amount, appropriate pressure reducing and relief valves should be specified.)

Connection to Water Softener. Full-sized valve connections shall be made from the city water meter to the softener inlet and from the water softener outlet to the house line supplying soft water to all plumbing fixtures. Provide a cesspool type floor drain adjacent to the softener and run a.....inch waste pipe from this floor drain to the house sewer. Waste pipe shall be given a fall sufficient to carry away.....gallons of water per minute.

Water Softener. Furnish and install complete a Model..... Permutit Water Softener (downflow). The softener shall have a capacity between regenerations of.....gallons of zero hard water when the water entering the softener is.....grains hard. All water and waste connections (and electrical outlet if softener is automatic) for the softener shall be furnished by the contractor. It will be.....inches in diameter and will require a floor space of..... Height overall will be..... Salt consumption will be.....pounds per regeneration.

Hard Water Connections. Hard water connections to yard hydrants shall be provided.

Zeolite. The softener will contain the proper zeolite, as determined by a water analysis, evenly disposed upon graded gravel of sufficient depth to prevent the entry of the zeolite into the house line during the softening operation.

Shell Design. Shell shall be of welded steel construction, hot-dipped galvanized after fabrication, constructed for water working pressure of 100 pounds per square inch and a test pressure of 150 pounds per square inch. The shell shall be finished in white baked enamel. (For JS Line, blue baked enamel.)

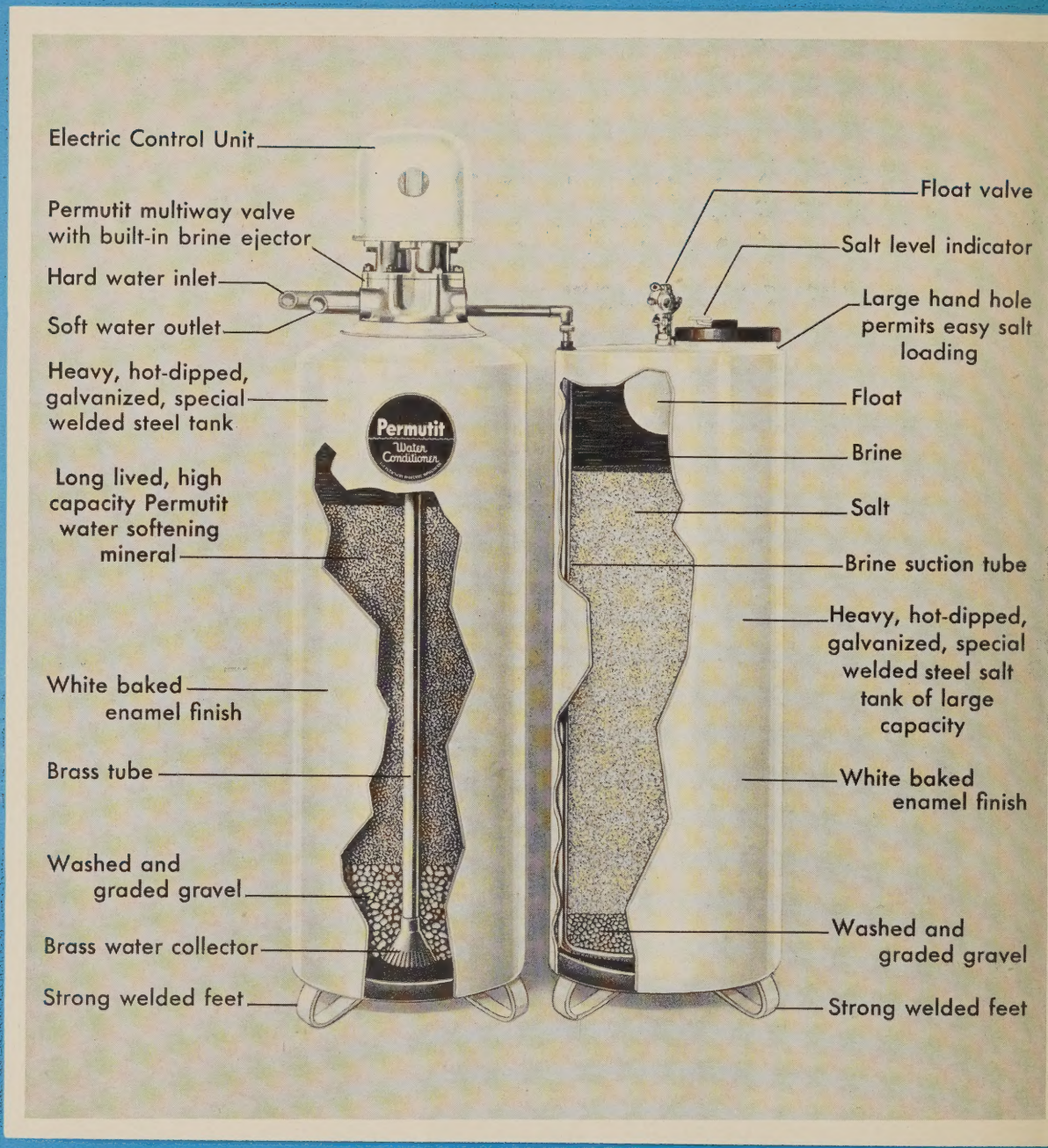
Operating Valve. Operating valve shall be a single multiway valve, with built-in brine ejector and a built-in automatic by-pass to supply a continuous flow of water to the home during regeneration. Automatic model shall have single valve operation controlled by electric motor and shall be self regenerating. The current is (AC)-(DC),.....Volts,.....Cycles,.....Phase.

NOTE: The data necessary to fill in the blanks in the above specifications will be found on the following pages.

TYPICAL SPECIFICATIONS

Automatic Water Softener Series ES

THE FINEST MONEY CAN BUY



Cycle of operation: (1) As the first step in regeneration, the softener is cut out of service and as regeneration starts, raw water is automatically by-passed to the house lines; (2) The accumulated dirt is next lifted from the mineral and flushed to the sewer by reversing the flow of water through the softener; (3) Salt solution is ejected from the brine tank into the softener; (4) The salt solution, now containing the hardness forming elements, is rinsed from the softener into the sewer; (5) Softener is returned to service. All these operations are fully automatic.

CAPACITY IN GALLONS OF WATER THAT CAN BE SOFTENED BETWEEN REGENERATIONS					
Hardness of water in grains per U. S. Gallon	MODELS ES — EST — ESM				
	12"*†	15"*†	18"†	22"*†	28"*†
GRAINS	GALS.	GALS.	GALS.	GALS.	GALS.
2	10500	16500	24000	36000	58500
3	7000	11000	16000	24000	39000
4	5250	8250	12000	18000	29250
5	4200	6600	9600	14400	23400
6	3500	5500	8000	12000	19500
7	3000	4715	6860	10290	16720
8	2625	4125	6006	9000	14640
9	2335	3665	5333	8000	13000
10	2100	3300	4800	7200	11700
11	1910	3000	4365	6545	10630
12	1750	2750	4000	6000	9760
13	1615	2540	3690	5540	9000
14	1500	2355	3430	5145	8360
15	1400	2200	3200	4800	7810
16	1310	2060	3000	4500	7320
18	1165	1830	2665	4000	6500
20	1050	1650	2400	3600	5850
22	955	1500	2180	3275	5325
24	875	1375	2000	3000	4875
26	805	1270	1845	2770	4510
28	750	1180	1715	2570	4180
30	700	1100	1600	2400	3900
32	655	1030	1500	2250	3655
34	615	970	1410	2120	3445
36	585	920	1330	2000	3250
38	550	870	1265	1895	3180
40	525	825	1200	1800	2925
42	500	785	1145	1715	2790
44		750	1090	1635	2660
46		715	1040	1565	2545
48		690	1000	1500	2435
50		660	960	1440	2340

***Where Super Zeo-Dur is recommended in place of Decalso the capacities are one-half the above figures.**
†Where Zeo-Dur is recommended in place of Decalso the capacities are one-quarter the above figures.
***†Where either Zeo-Dur or Super Zeo-Dur is recommended minimum capacity between regenerations is 300 gals.**

HOW IT WORKS

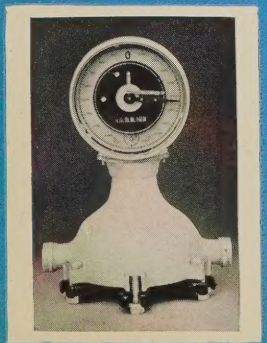
Water enters the top of the softener and flows downward through the bed of mineral, which extracts the hardness-forming elements—calcium and magnesium. The softened water is collected at the bottom of the softener tank by a brass collector and flows up through a pipe to service through the house.

When the mineral has removed its capacity of hardness, it is automatically regenerated. This is accomplished by means of a single multi-way valve mounted on the top of the softener. The automatic models go through this cycle when a switch is flipped, starting a motor which operates the valve. All the attention Series ES need is periodic filling of the brine tank with clean, white, pea-sized salt. In some automatic models, the motor is started with a time clock or meter.

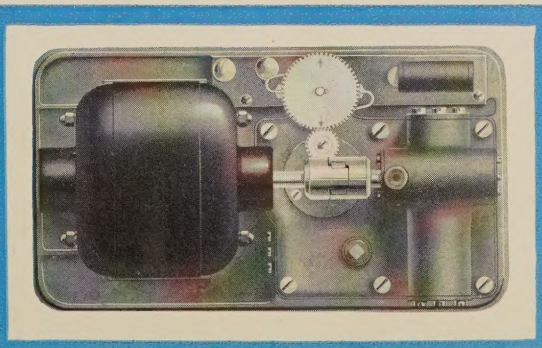
SPECIFICATIONS

Models ES—EST—ESM	Expressed as	12"	15"	18"	22"	28"
Height overall*	inches	58	59	60	62	63
Floor space	inches	13 x 27	16 x 33	19 x 39	23 x 47	30 x 60
Softener tank diameter	inches	12	15	18	22	28
Salt tank diameter	inches	12	15	18	22	28
Salt tank refill	lbs.	98	154	224	336	546
Pipe size	inches	1	1	1	1¼	1¼
Softener gravel (⅜")	lbs.	48	76	114	177	300
Salt tank gravel (⅜")	lbs.	13	22	37	62	114
Softener mineral (Decalso)	cu. ft.	1.75	2.75	4.0	6.0	9.75
Salt per regeneration**	lbs.	14	22	32	48	78
Regenerations per salt refill	—	7	7	7	7	7
Original salt tank fill	lbs.	126	198	288	432	702
Approximate shipping weight	lbs.	440	565	820	1130	1715
Approximate operating weight	lbs.	700	1150	1300	2100	3000
Area of bed	sq. ft.	0.78	1.22	1.76	2.64	4.28
Wash rate	g.p.m.	5-7	7-11	10-16	15-24	25-38
Flow rate	g.p.m.	6.5	10	14	21	34
Capacity***	grains	21000	33000	48000	72000	117000

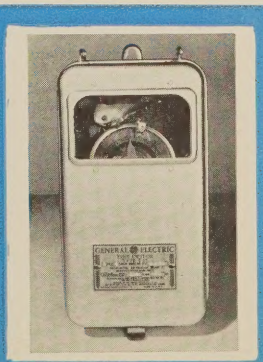
***Allow 7" for cover removal. **With Zeo-Dur, salt consumption is one quarter of the above figure—With Super-Zeo-Dur, one half.**
*****With Zeo-Dur, capacity is one quarter of the above figure—with Super-Zeo-Dur, one half.**



Meter Control for Model ESM



Notice the simplicity of construction of the compact operating unit



Clock Control for Model EST

Water Softener Series MS

CONVERTIBLE TO FULLY AUTOMATIC CONTROL

CAPACITY IN GALLONS OF WATER THAT CAN BE SOFTENED BETWEEN REGENERATIONS					
Hardness of water in grains per U. S. Gallon	MODEL MS				
	12″*†	15″*†	18″*†	22″*†	28″*†
GRAINS	GALS.	GALS.	GALS.	GALS.	GALS.
2	10500	16500	24000	36000	58500
3	7000	11000	16000	24000	39000
4	5250	8250	12000	18000	29250
5	4200	6600	9600	14400	23400
6	3500	5500	8000	12000	19500
7	3000	4715	6860	10290	16720
8	2625	4125	6006	9000	14640
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14	1500	2355	3430	5145	8360
15	1400	2200	3200	4800	7810
16	1310	2060	3000	4500	7320
18	1165	1830	2665	4000	6500
20	1050	1650	2400	3600	5850
22	955	1500	2180	3275	5325
24	875	1375	2000	3000	4875
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44		750	1090	1635	2660
46		715	1040	1565	2545
48		690	1000	1500	2435
50		660	960	1440	2340

***Where Super Zeo-Dur is recommended in place of Decalso the capacities are one-half the above figures.**
†Where Zeo-Dur is recommended in place of Decalso the capacities are one-quarter the above figures.
***†Where either Zeo-Dur or Super Zeo-Dur is recommended minimum capacity between regenerations is 300 gals.**

HOW IT WORKS

The operation of the MS Permutit water softener is similar to the automatic or ES model with the exception that the multiway valve which is mounted on top of the softener shell must be turned by hand to regenerate the unit. It is possible at any time to install fully automatic controls on any MS model. This conversion is moderate in cost.

In size, this model is identical with the ES softener and their capacities between regenerations are exactly the same.

The operations of regeneration for this model are the same as for the automatic softener described on pages 6 and 7.

SPECIFICATIONS

Model MS	Expressed as	12″	15″	18″	22″	28″
Height overall	inches	53	54	55	56	58
Floor space	inches	13 x 27	16 x 33	19 x 39	23 x 47	30 x 60
Softener tank diameter	inches	12	15	18	22	28
Salt tank diameter	inches	12	15	18	22	28
Salt tank refill	lbs.	98	154	224	336	546
Pipe size	inches	1	1	1	1¼	1¼
Softener gravel (⅜″)	lbs.	48	76	114	177	300
Salt tank gravel (⅜″)	lbs.	13	22	37	62	114
Softener mineral (Decalso)	cu. ft.	1.75	2.75	4.0	6.0	9.75
Salt per regeneration*	lbs.	14	22	32	48	78
Regenerations per salt refill	—	7	7	7	7	7
Original salt tank fill	lbs.	126	198	288	432	702
Approximate shipping weight	lbs.	410	540	790	1110	1680
Approximate operating weight	lbs.	670	1120	1270	2060	2960
Area of bed	sq. ft.	0.78	1.22	1.76	2.64	4.28
Wash rate	g.p.m.	5-7	7-11	10-16	15-24	25-38
Flow rate	g.p.m.	6.5	10	14	21	34
Capacity **	grains	21000	33000	48000	72000	117000

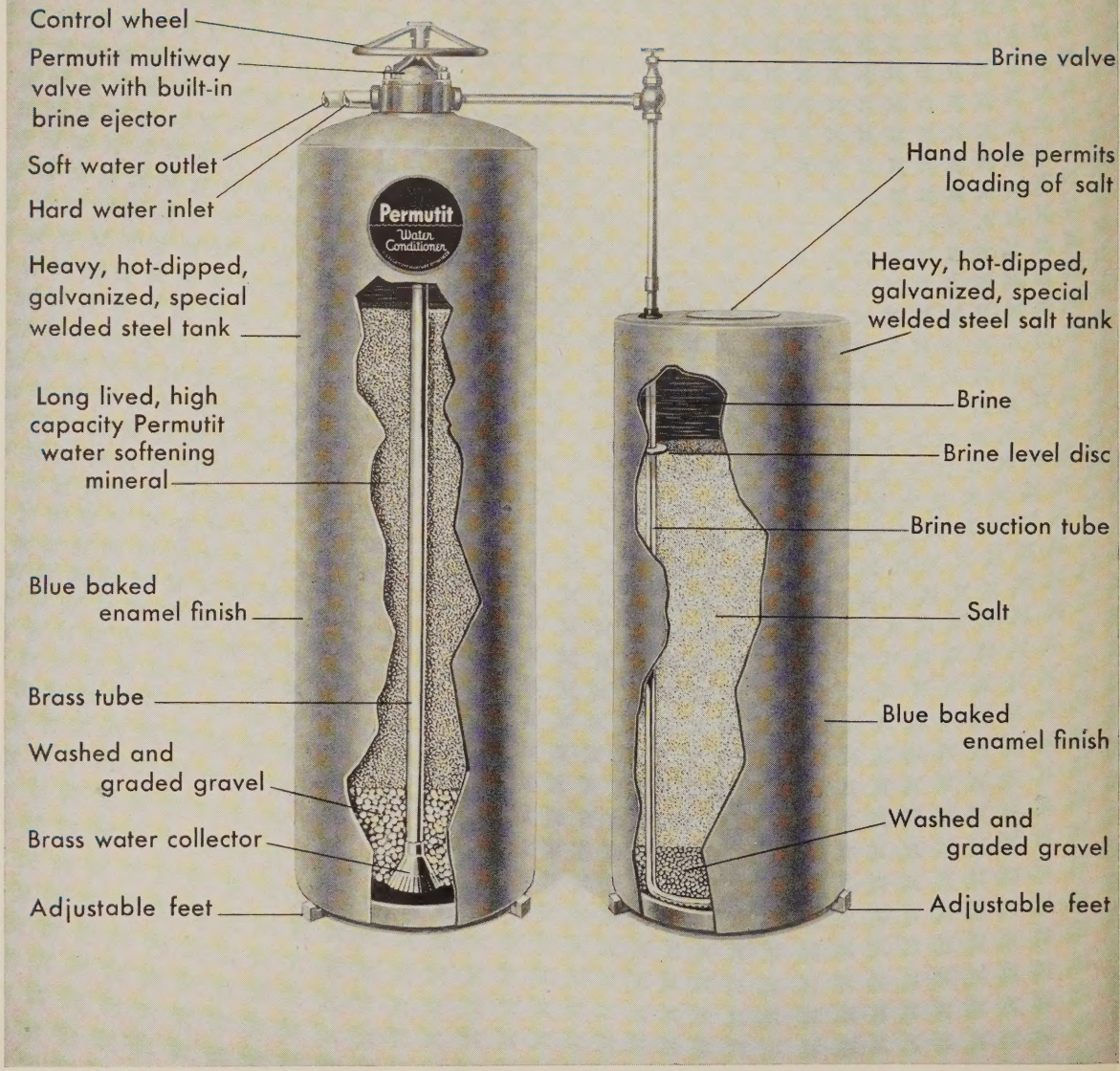
***With Zeo-Dur, salt consumption is one quarter of the above figure—with Super-Zeo-Dur, one half.**
****With Zeo-Dur, capacity is one quarter of the above figure—with Super-Zeo-Dur, one half.**

CONVERTIBLE

A model MS softener can be installed to operate with manual control, and can later have the automatic control unit added to it.

Water Softener Series J and JS

SIMPLE—STURDY—DEPENDABLE



CAPACITY IN GALLONS OF WATER THAT CAN BE SOFTENED BETWEEN REGENERATIONS			
Hardness of water in grains per U. S. Gallon	MODEL		
	J9* JS9	J12* JS12	JS15
Grains	Gallons	Gallons	Gallons
2	5500	10000	15000
3	3650	6650	10000
4	2750	5000	7500
5	2200	4000	6000
6	1830	3330	5000
7	1570	2850	4285
8	1375	2500	3750
9	1220	2220	3330
10	1100	2000	3000
11	1000	1810	2730
12	915	1660	2500
13	845	1530	2305
14	785	1430	2145
15	730	1330	2000
16	685	1250	1870
18	610	1110	1665
20	550	1000	1500
22	500	905	1365
24	.....	830	1250
26	.....	770	1155
28	.....	710	1065
30	.....	665	1000
32	.....	625	940
34	.....	585	880
36	.....	555	830
38	.....	525	790
40	.....	500	750

*Without salt tank.

HOW IT WORKS

Models J and JS operate exactly as the MS softener except that they are not convertible to automatic control. Models J are furnished without a salt tank. The brine for regeneration is mixed in a galvanized or porcelain pail or container and is drawn through a rubber hose into the softener. These models are finished in blue baked enamel.

The capacities of these softeners are lower than either the ES or MS models. They are likewise priced considerably lower.

Attention is called to the fact that the 9" unit cannot be used on water containing more than 22 grains of hardness nor can the 12" and 15" be used on water of more than 40 grains of hardness.

SPECIFICATIONS

Model J—JS	Expressed as	9"	12"	15"
Height overall	inches	54	55	56
Floor space	inches	10 x 21	13 x 27	16 x 33
Softener tank diameter	inches	9	12	15
Salt tank diameter (JS)	inches	9	12	15
Salt tank refill	lbs.	48	84	125
Pipe size	inches	½	½	¾
Softener gravel (⅜")	lbs.	22	48	76
Salt tank gravel (⅜")	lbs.	6	13	22
Softener mineral (Decalso)	cu. ft.	0.92	1.67	2.5
Salt per regeneration	lbs.	8	14	20
Regenerations per salt refill	—	6	6	6
Approximate shipping weight J	lbs.	180	265	
Approximate shipping weight JS	lbs.	230	370	520
Approximate operating weight J	lbs.	250	400	
Approximate operating weight JS	lbs.	400	670	1070
Area of bed	sq. ft.	0.44	0.78	1.22
Wash rate	g.p.m.	2.5-4.5	5-7	7-11
Flow rate	g.p.m.	3.5	6.25	9.75
Capacity	grains	11000	20000	30000

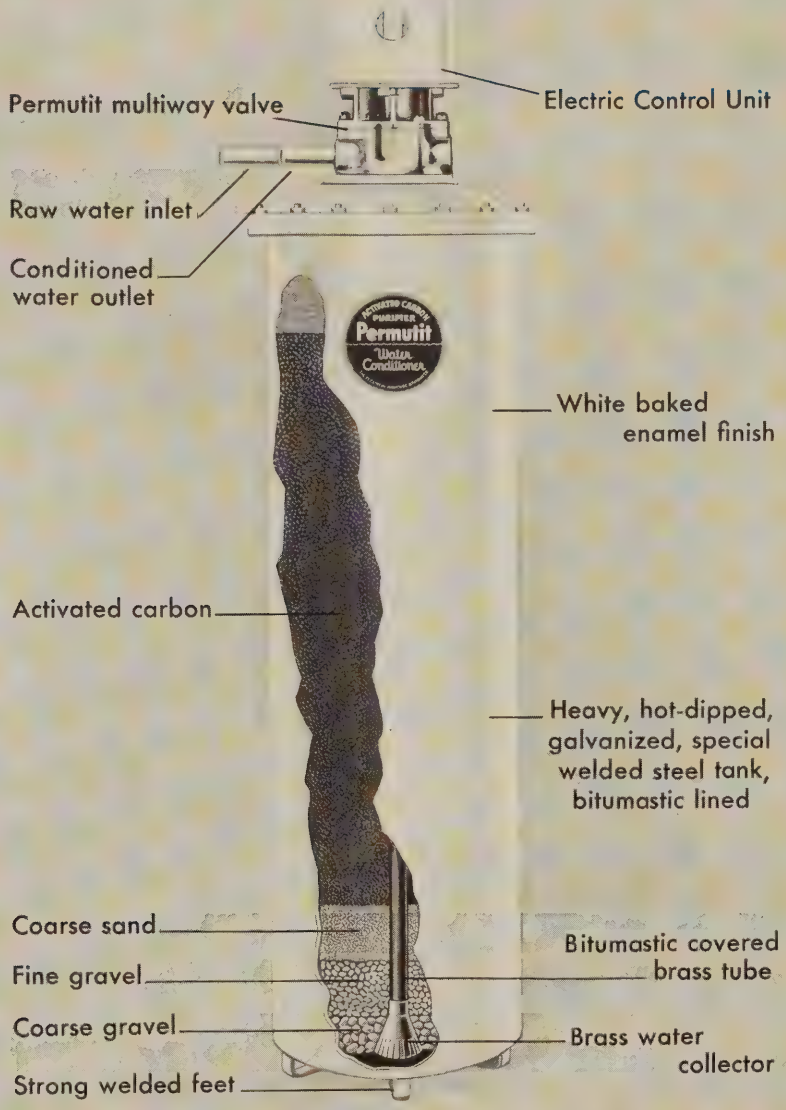
15" size furnished in JS only.

INEXPENSIVE—STURDY

For those who want a dependable supply of real Permutit softened water at lowest cost

Automatic Activated Carbon Purifier Series AP

TO REMOVE BAD TASTE AND ODOR



A Permutit Activated Carbon Purifier owes its action to the power of refined charcoal (activated carbon) to adsorb foreign materials from water. In this fashion it removes bad taste and odor as rapidly as water flows through it. Some water supplies which are chlorinated for protection against infection have an unpleasant residual taste. This can be overcome with an Activated Carbon Purifier. Fishy and marshy tastes can likewise be taken out. The Purifiers are lined with a protective coating of bitumastic. These are obtainable with automatic control as illustrated or with a single manually controlled valve.

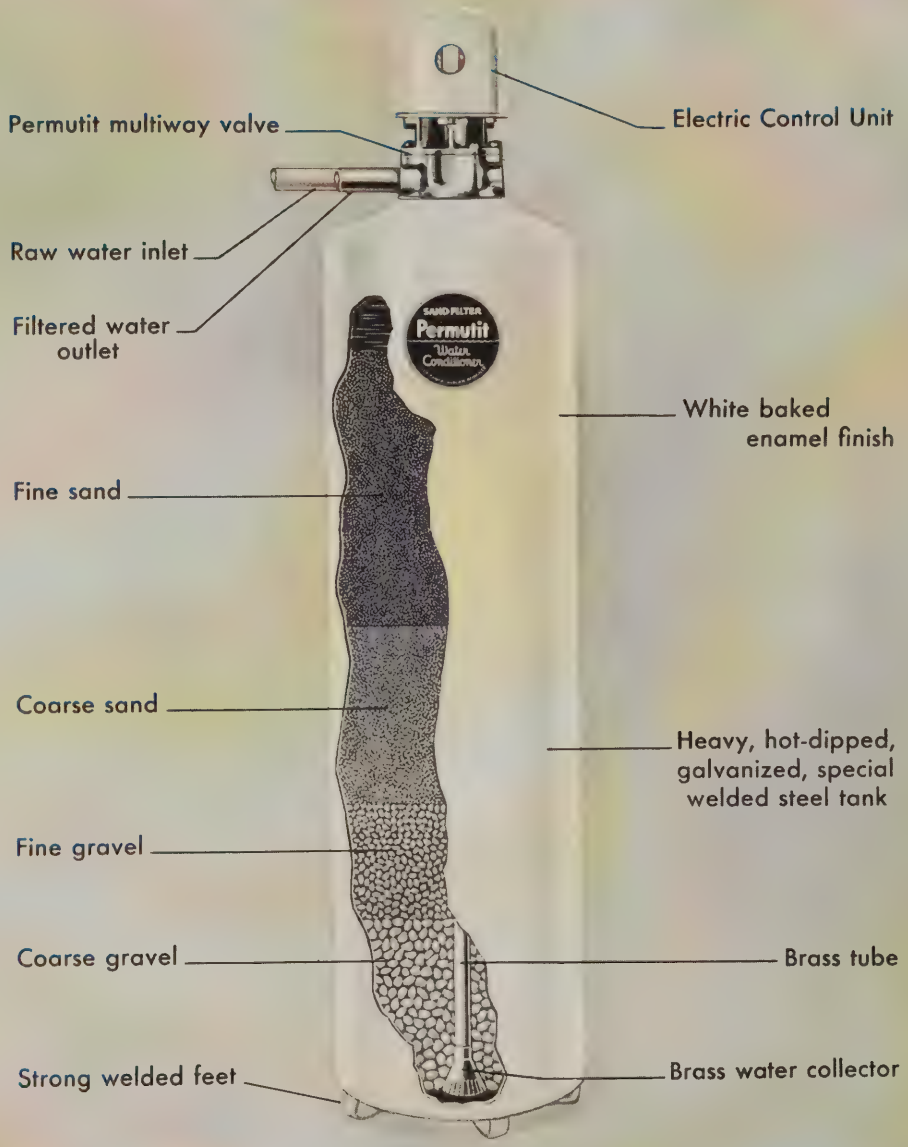
SPECIFICATIONS

Model AP and EAP	Expressed as	12″	15″	18″	22″	28″
Height overall (Manual)*	inches	59	60	61	62	64
Floor space	inches	16 x 16	17 x 19	20 x 22	24 x 26	30 x 32
Tank diameter	inches	12	15	18	22	28
Pipe size	inches	1	1	1	1¼	1¼
Coarse gravel (3/8″)	lbs.	13	22	33	62	114
Fine gravel (3/16″)	lbs.	35	54	77	115	186
Coarse sand	lbs.	21	32	46	69	112
Activated carbon	cu ft.	1.75	2.75	4.0	6.0	9.75
Approximate shipping weight	lbs.	255	320	455	575	925
Approximate operating weight	lbs.	375	500	775	1150	1825
Area of bed	sq. ft.	0.78	1.22	1.76	2.64	4.28
Wash rate	g.p.m.	4.0	6.0	9.0	13.0	21.5
Flow rate	g.p.m.	3.0	5.0	7.0	10.5	17.0

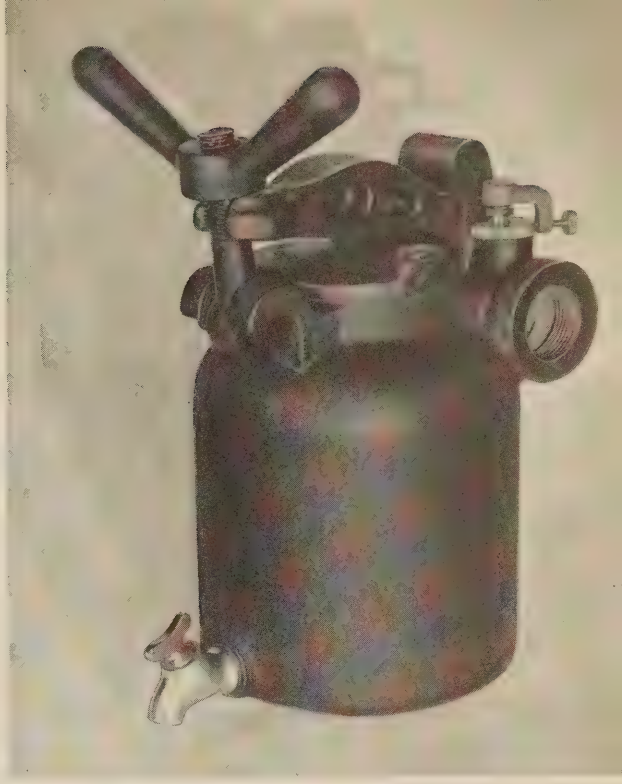
*For automatic models add 13″.

Automatic Sand Filter Series SF

FOR REMOVAL OF DIRT AND SUSPENDED MATTER



SOME water supplies are clean for a large portion of the year and at other times become quite muddy or dirty. Other water supplies, particularly lake and river waters, are chronically somewhat discolored. Permutit Sand Filters are designed to make water crystal-clear. They operate efficiently and are very easily controlled. Periodic backwashing to remove the accumulated dirt is accomplished automatically in the unit illustrated. The hand operated units are backwashed by manipulation of the single control valve located on the filter.



ALUM FEED

An alum feed, to precede the sand filter, is required when the turbidity content is great or very finely divided or when the color content is objectionable. Without the alum feed, this fine matter would pass through the filter. The purpose of the alum is to form a gelatinous mass ("floc") on top of the filter bed which strains out the very finely divided suspended matter. It is connected on the inlet to the filter and a small amount of water (controlled by a butterfly valve) is bypassed through the feed where it picks up sufficient alum to perform its function. Backwashing the filter removes the accumulated floc, together with the material it has strained out.

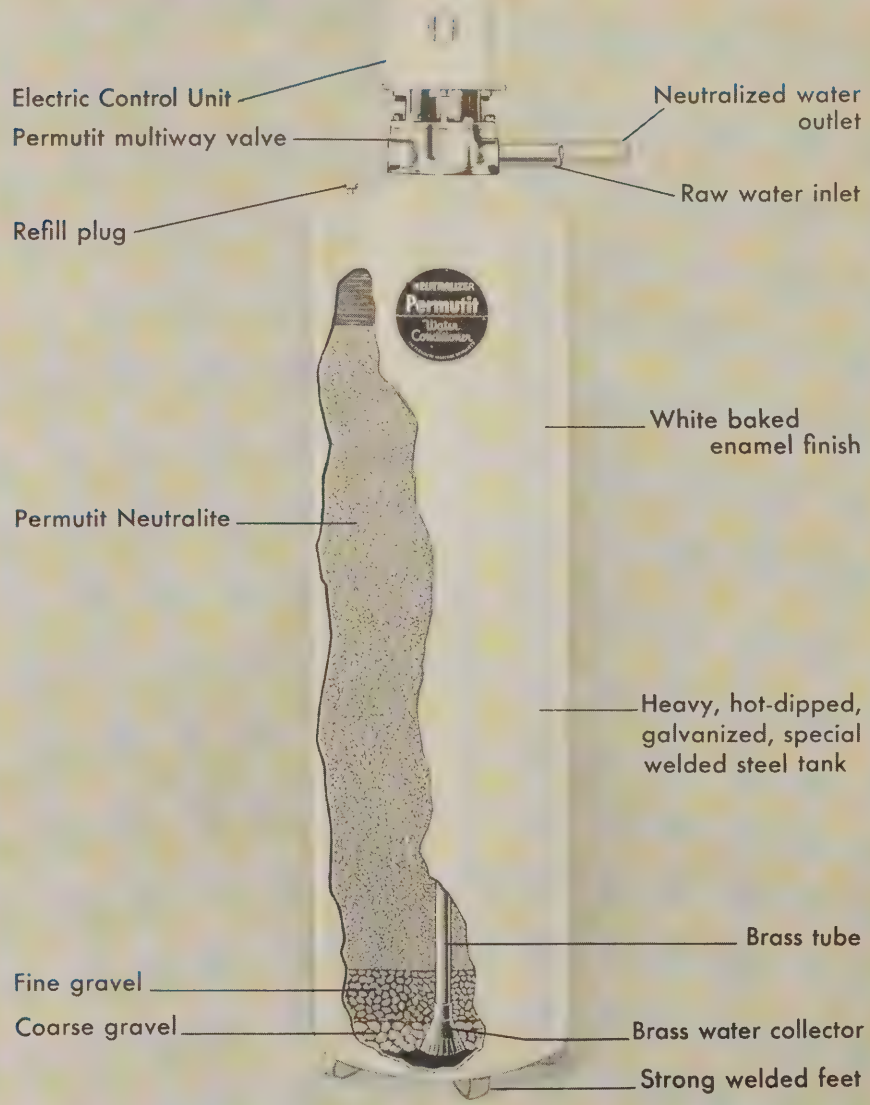
SPECIFICATIONS

Model SF and ESF	Expressed as	12″	15″	18″	22″	28″†
Height overall (Manual)*	inches	53	54	55	56	58
Floor space	inches	14 x 16	17 x 19	20 x 22	24 x 26	30 x 32
Filter tank diameter	inches	12	15	18	22	28
Pipe size	inches	1	1	1	1¼	1¼
Coarse gravel (3/8″)	lbs.	48	76	114	177	300
Fine gravel (3/16″)	lbs.	35	54	77	115	187
Coarse sand	lbs.	62	97	139	208	338
Fine sand	lbs.	95	150	216	324	525
Approximate shipping weight	lbs.	390	545	800	1130	1780
Approximate operating weight	lbs.	500	725	1125	1600	2600
Area of bed	sq. ft.	0.78	1.22	1.76	2.64	4.28
Wash rate	g.p.m.	8	12	18	26	43
Flow rate	g.p.m.	3	5	7	10.5	17

*For automatic models add 13″.
†Furnished in Manual only.

Automatic Neutralizer Series CN

TO INHIBIT CORROSION



THE corrosive quality of many waters is governed by their slight acidity, or in more technical language, by their low pH. To make such corrosive waters less aggressive, the Permutit Neutralizer has been developed. The tank is filled with a substance which reacts with the acid-forming materials in the water and completely neutralizes them. Due to the very nature of this reaction, it is impossible for the water to be over-treated. The equipment requires no great care except for adding to the neutralizing material after many months of use. This material is inexpensive and easily replaced.

SPECIFICATIONS

Model CN and ECN	Expressed as	12"†	15"†	18"	22"	28"
Height overall (Manual)*	inches	59	60	61	62	64
Floor space	inches	14 x 16	17 x 19	20 x 22	24 x 26	30 x 32
Filter tank diameter	inches	12	15	18	22	28
Pipe size	inches	¾	¾	1	1	1¼
Coarse gravel (3/8")	lbs.	13	22	37	62	110
Fine gravel (3/16")	lbs.	35	54	77	115	187
Neutralite	cu. ft.	2.14	3.36	4.84	7.26	11.77
Approximate shipping weight	lbs.	425	620	860	1230	1925
Approximate operating weight	lbs.	540	785	1200	1730	2800
Area of bed	sq. ft.	0.78	1.22	1.76	2.64	4.28
Wash rate	g.p.m.	5-7	7-11	11-16	16-24	26-39
Flow rate	g.p.m.	2.5	3.5	5.5	8.0	13.0

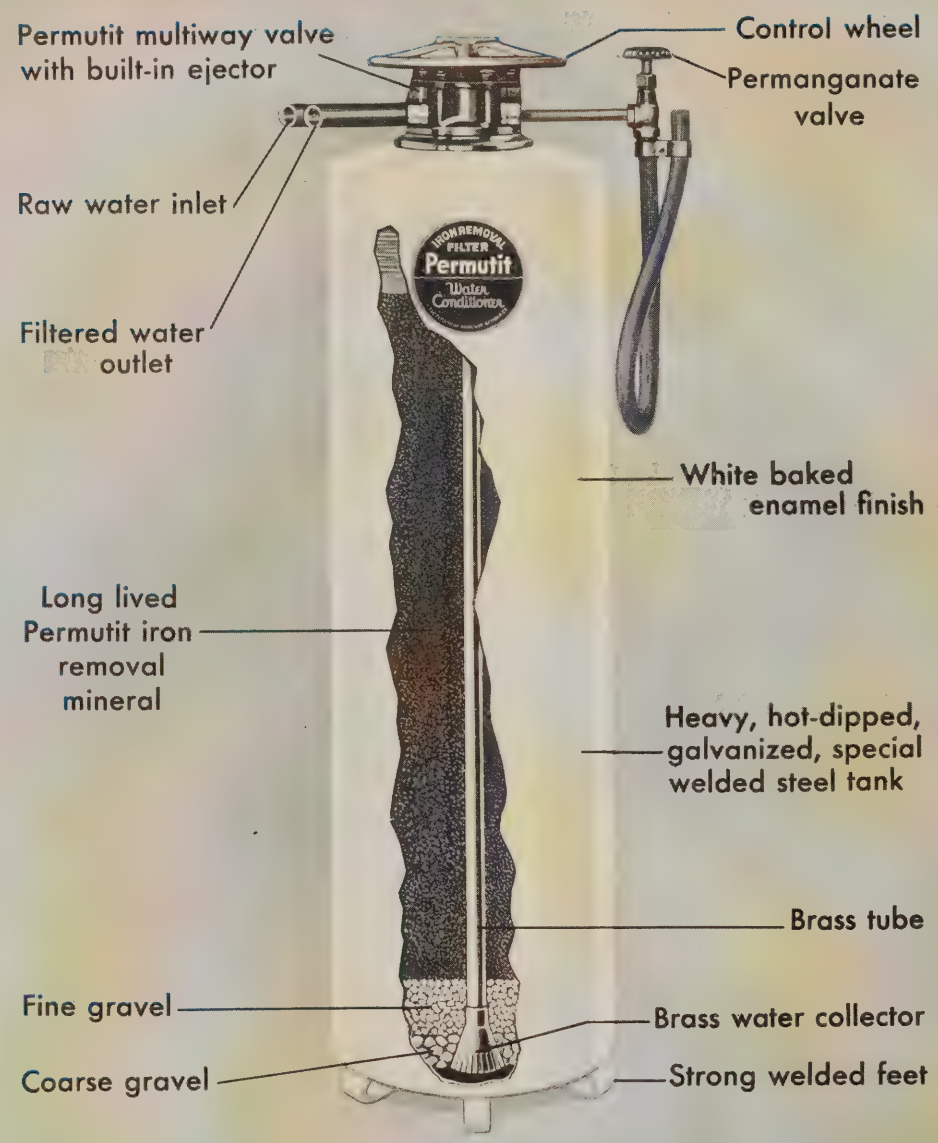
*For automatic models add 13".
†Furnished in Manual only

CONVERTIBLE

The Permutit Neutralizer is convertible to fully automatic operation in sizes 18"; 22" and 28" only.

Iron Removal Filter Series MF

POSITIVE—HARMLESS—INEXPENSIVE



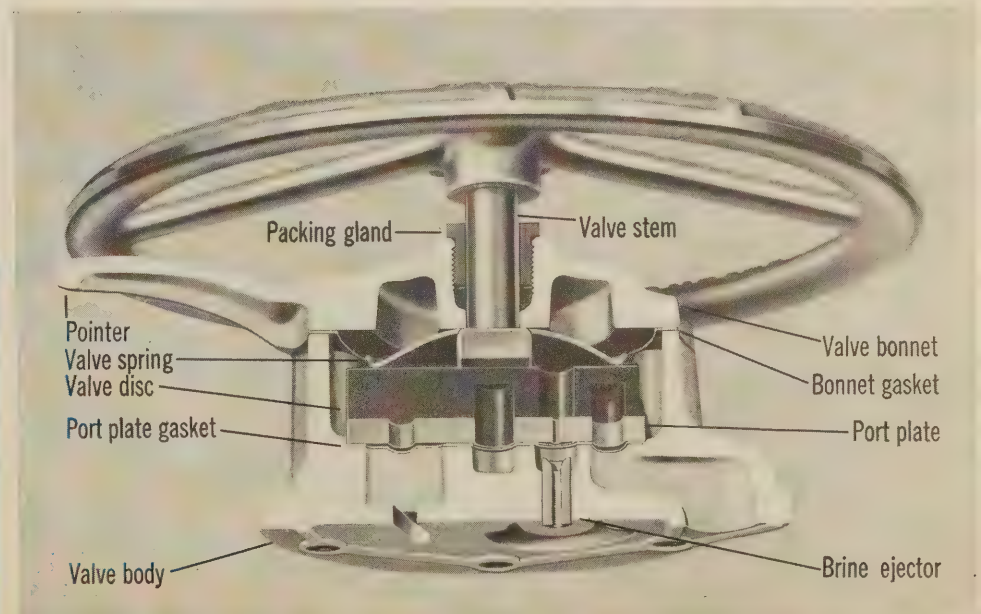
CERTAIN natural waters contain iron. The Permutit Iron Removal Filter* has been designed to treat such waters where this impurity is present in objectionable quantity. By reducing the iron to a negligible point, rust spots on linens and porcelain are avoided and the taste and appearance of the water improved. The long lived iron removal mineral may be periodically regenerated with a permanganate solution (which is easy to prepare and handle) by inserting the rubber hose in a bucket containing the solution, turning the multiway valve to the "Regenerate" position and opening the permanganate valve. This unit is not convertible to automatic operation.

***A pneumatic tank must be placed in the line preceding the filter.**

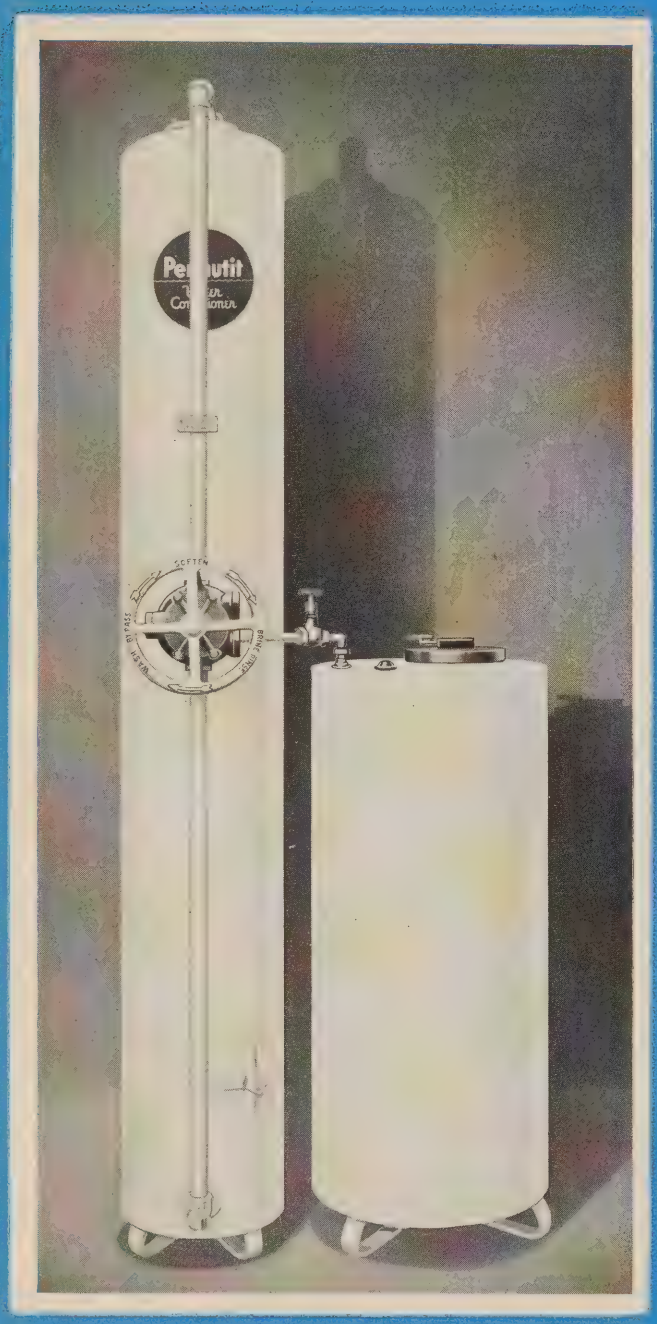
SPECIFICATIONS

Model MF	Expressed as	12"	15"	18"	22"	28"
Height overall	inches	53	54	55	56	58
Floor space	inches	14 x 16	17 x 19	20 x 22	24 x 26	30 x 32
Filter tank diameter	inches	12	15	18	22	28
Pipe size	inches	1	1	1	1¼	1¼
Coarse gravel (3/8")	lbs.	13	22	37	62	114
Fine gravel (3/16")	lbs.	35	54	77	115	186
Mineral	cu. ft.	1.75	2.75	4.0	6.0	9.75
Permanganate per regeneration	lbs.	1/3	1/2	3/4	1¼	1¾
Approximate shipping weight	lbs.	335	465	680	985	1520
Approximate operating weight	lbs.	500	725	1125	1600	2600
Area of bed	sq. ft.	0.78	1.22	1.76	2.64	4.28
Wash rate	g.p.m.	5.5-8	8.5-12	12-18	18.5-26	30-43
Flow rate—less than 5 p.p.m. Fe	g.p.m.	3	5	7	10.5	17
5-10 p.p.m. Fe	g.p.m.	2.5	3.5	5.5	8.0	13.0
more than 10 p.p.m. Fe	g.p.m.	1.5	2.5	3.5	5.5	8.5

This is a cut away section of the multiway valve used on all Permutit equipment.



Model MSDB Water Softener



THIS is a special model of water softener which is used for exceptionally hard water supplies. It finds application when the water hardness ranges between 50 and 100 grains per gallon.

Permutit Deep Bed Water Softeners operate on exactly the same principle as the standard MS models, with the exception, as their name implies, that the bed is especially deep. They are controlled by the single valve which is located at a convenient hand-high position, and are not convertible to automatic operation.

SPECIFICATIONS

Model MSDB	Expressed as	12"	15"	18"
Height overall	inches	92	93	93½
Floor space	inches	25 x 33	28 x 40	31 x 45
Softener tank diameter	inches	12	15	18
Salt tank diameter	inches	18	22	22
Salt tank refill	lbs.	196	308	448
Pipe size	inches	1	1	1
Softener gravel (⅜")	lbs.	62	105	158
Salt tank gravel (⅜")	lbs.	37	62	62
Softener mineral (Decalso)*	cu. ft.	3.5	5.5	8.0
Salt per regeneration	lbs.	28	44	64
Regenerations per salt refill	—	7	7	6
Original salt tank fill	lbs.	252	396	512
Approximate shipping weight	lbs.	770	1045	1340
Approximate operating weight	lbs.	1400	2200	2750
Area of bed	sq. ft.	0.78	1.22	1.76
Wash rate	g.p.m.	4-7	6-11	9-16
Flow rate	g.p.m.	6.5	10.0	14
Capacity	grains	42000	66000	96000

*Furnished with Decalso only.

PE-6 AND P-3 WATER SOFTENER

The Model PE-6 portable water softener has been developed especially for use by travellers, renters and apartment house dwellers. The unit fastens to a single faucet with self-clamping rubber adapter or may be permanently piped, and perfectly softens the water drawn at that point. It is finished in white porcelain enamel, inside and out.

The Model P-3 portable water softener is a still smaller unit than the PE-6. It likewise attaches to a faucet by means of a rubber adapter. It is finished in chromium plate.

Table Showing Approximate Capacity of Model PE-6 and P-3 Softeners Between Regenerations

Hardness gr./gal.	Capacity gal.	
	PE-6	P-3
5	400	60
10	200	30
15	120	18
20	80	13
25	55	10
30	40	—

SPECIFICATIONS

Model		PE-6	P-3
Height overall	in.	17	8½
Floor space	in.	9 x 9	4 x 4
Softener tank diameter	in.	6	3
Pipe size	in.	¼"—(⅜" I.D. Rubber Hose for portable use)	⅜" I.D. Rubber Hose
Softener mineral*	cu. ft	0.15	0.025
Salt per regeneration	lbs.	2	0.2
Approx. ship. weight	lbs.	22	4
Approx. oper. weight	lbs.	26	6
Area of Bed	sq. ft.	0.35	0.05
Wash rate	g.p.m.	2	—

***Portable models are equipped with Decalso only.**

PA-6 PURIFIER

The Model PA-6 Purifier is a portable unit similar in appearance to Model PE-6 water softener as illustrated above. The shell is lined with bitumastic and contains a bed of activated carbon which removes bad taste and odor from water as it flows from the faucet. (Similar in operation to Model AP shown on pages 12 and 13.)

SPECIFICATIONS

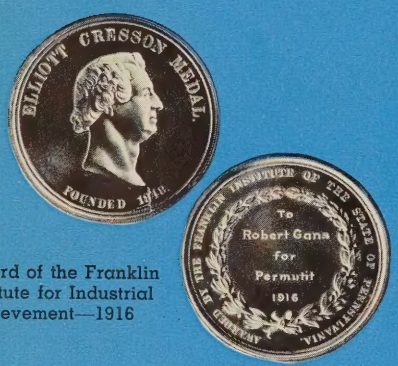
Model PA-6	Expressed as	
Height overall	inches	17
Floor space	inches	9 x 9
Tank diameter	inches	6"
Pipe size	inches	¼"—(⅜" I.D. Rubber Hose for portable use)
Mineral (Activated Carbon)	cu. ft.	0.15
Approximate ship. weight	lbs.	22
Approximate oper. weight	lbs.	26
Area of bed	sq. ft.	0.35

Model PE-6 Water Softener

Model P-3 Water Softener

Medals awarded The Permutit Company over 20 years ago for its achievement in pioneering the science of water conditioning.

Gold Medal, Highest Award, San Francisco —1915



Award of the Franklin Institute for Industrial Achievement—1916

Gold Medal, Highest Award, Ghent, Belgium—1913

PERMUTIT

WATER CONDITIONING *Headquarters*

The Permutit Company is the largest manufacturer of water conditioning equipment in the world. For more than 25 years its reputation has been firmly established in the industrial, municipal and household fields. Its industrial products are distributed by its own sales force. Its household products are distributed by authorized dealers.

The experience of the Company has extended to many thousands of installations in more than 400 different industries; to tens of thousands of household installations of all kinds.

The complete facilities of The Permutit Company are at your service to determine the kind of water conditioning best suited for each individual case. Analyses of water supplies of all major communities are on record in The Permutit Company's files. For private supplies or small communities, a shipping carton for a water sample will be furnished upon request. Samples of water are analyzed free of charge and recommendations as to equipment for conditioning are quickly given. Send the Water Conditioning Data Sheet which appears on page 23 of this book to the Household Sales Department, The Permutit Company, 330 West 42nd Street, New York.

The Permutit Company

330 West 42nd Street, New York, N. Y.

WATER CONDITIONING DATA SHEET

HOUSEHOLD SALES DEPARTMENT · THE PERMUTIT COMPANY · 330 W. 42nd St. · New York, N. Y.

NAME_____ DATE_____

ADDRESS_____

_____

Number of persons in house including servants_____ Number of bathrooms_____

Toilets are furnished with (Check one) ☐ Flush tanks ☐ Flushometer valves Number of toilets____ Number of showers____

Piping in house is Copper ☐ Brass ☐ Lead ☐ Iron ☐ Other_____

Source of water: City_____ Well_____ Pond_____ River_____

If private supply, has sample been sent us for analysis?_____ (name) Date_____ Should we send sample carton to you?_____ (name)

Electric current is_____ Volts. AC ☐ DC ☐ _____ Cycles_____ Phase.

What are the characteristics of the water supply? (Check)

Hard ☐ Turbid ☐ Highly colored ☐ Bad odor ☐ Bad taste ☐ Clear when drawn ☐

Turns brown on standing ☐ Rust stains in basin ☐ Green or blue stains on basin ☐ Poor flow ☐

Noticeable corrosion or rusting ☐ Other troubles_____

IF YOU HAVE A PNEUMATIC TANK:

(a) Capacity of tank is_____ gals.

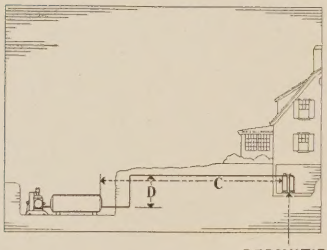
(b) Pressure varies from_____ (low) to_____ (high) lbs. per sq. in.

(c) Pipe line is_____ ft. long and_____ in. diam.

(d) Height of softener above tank will be_____ ft.

(e) Type of pump (check one) plunger ☐ centrifugal ☐ rotary ☐

(f) Capacity of pump_____ gals. per hour.



PERMUTIT

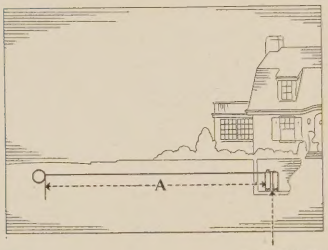
IF YOU HAVE CITY WATER:

(a) Pipe line from water main to house meter is

_____ ft. long and_____ in. diam.

(b) Size of meter is_____ (See nameplate)

(c) Water pressure is_____ lbs. per sq. inch



PERMUTIT

IF YOU HAVE A TANK AT THE TOP OF YOUR HOUSE:

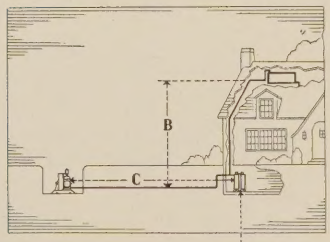
(a) Size of pipe leading from pump to storage tank is_____ in. diam.

(b) Height of storage tank above softener is_____ ft.

(c) Pipe line from pump to softener is_____ ft. long

(d) Capacity of pump is_____ gals. per hour

(e) Capacity of tank_____ gals.



PERMUTIT

IF YOU HAVE AN ELEVATED STORAGE TANK

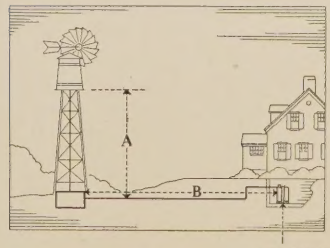
(a) Height of storage tank above location of water softener is_____

(b) Pipe line from base of mill to softener is

_____ ft. long and_____ in. diam.

(c) Capacity of pump_____ gals. per hour

(d) Capacity of tank_____ gals.



PERMUTIT

FILL IN FOR ESTIMATE OF COST

COMPARE

HARD WATER	CONDITIONED WATER
BATHING	
Makes skin drawn and prickly—clogs pores. Deposits sticky soap curds in hair, dulling lustre, causing brittleness, destroying wave. Makes a waterproof coating of soap curds around each whisker; causes even the sharpest blade to be dulled.	Keeps skin soft and clean as nature intended. Keeps pores free. Makes hair really glisten. Preserves all of natural wave and color. Thoroughly, quickly softens the toughest beard. Makes shaving easy—makes blades last longer.
COOKING	
Toughens green vegetables, causes loss of flavor. Impairs flavor of beverages—wastes supplies. Hard water often has an unpleasant taste.	Keeps vegetables tender, retains natural freshness with less cooking. Makes beverages taste better. Saves as much as ⅓ tea and coffee. Permutit adds no chemicals to water. Good to drink.
LAUNDERING	
Wastes soap, discolors clothes, often necessitates extra hard washing. Shortens life. Makes garments stiff, hard and rancid. Calls for hard scouring of woodwork—harms finish. Leaves dirt-collecting, sticky film.	Saves 50-80% of soap formerly used. Makes clothes soft, sweet, clean Prolongs their life. Preserves lustre of wood and porcelain because only a mild soap is needed.

HARD WATER	CONDITIONED WATER
NURSERY	
Often causes rashes blamed on prickly heat. Milk bottles get scummy — harder to clean. Deposits a film of sticky soap curds on everything. Prevents thorough cleaning.	Eliminates many skin troubles. Makes bottles glisten. Makes all utensils clean and shiny after boiling to sterilize. Insures absolute cleanliness.
KITCHEN	
Causes streaks on china and glassware which have to be polished off by vigorous wiping. Makes work difficult. Almost impossible completely to remove grease.	Dishes can just be drained clean. Many pieces do not need to be touched by a towel. Cuts grease like magic. Saves hours of cleaning time.
CELLAR	
Scale chokes down flow of water. Makes faucets drip excessively. Makes rock-like deposits in coil and boiler. Fuel is wasted. Not enough hot water.	Keeps pipes free from scale. Faucets seat tightly. Coils last their full life. Minimum of fuel is consumed. Plenty of hot water.

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